WE CLAIM:

1. A process for the production of low base number calcium sulfonates comprising:
   a. preparing a sulfonic acid-oil solution by adding about 1 to about 20 volumes of a miscible solvent to a sulfonic acid-oil feedstock and optionally removing dissolved or entrained SO_2 or SO_3 if present;
   b. mixing the sulfonic acid-oil solution with about 1 to about 5 moles of water per mol of sulfonic acid and about 1 to about 10 moles of calcium hydroxide per mole of sulfonic acid to provide a reaction mixture;
   c. heating the reaction mixture to a temperature in the range of about 40 °C to about 200 °C;
   d. separating excess calcium hydroxide from the heated-reaction mixture to produce a reaction product comprising solvent, oil, and calcium sulfonate;
   e. removing the solvent from the reaction product to produce an intermediate product comprising oil and calcium sulfonate;
   f. optionally concentrating the intermediate product by removing at least a portion of the oil to produce a concentrated product; and
   g. recovering the intermediate product and/or concentrated product, wherein the product is essentially chloride free calcium sulfonate in oil.
2. The process of claim 1 in which the dissolved or entrained SO_2 or SO_3 if present is removed from the sulfonic acid solution.
3. The process of claim 1 in which the solvent is heptane.
4. The process of claim 2 in which the dissolved or entrained SO_2 or SO_3 is removed via stripping with nitrogen.
5. The process of claim 4 in which the sulfonic acid is centrifuged prior to stripping.

6. The process of claim 1 in which the amount of water is from about 1 to about 3 mol/mol of sulfonic acid.

7. The process of claim 1 in which the amount of calcium hydroxide is about 1 to about 5 mol/mol of sulfonic acid.

8. The process of claim 1 in which reaction mixture is heated at a temperature in the range from about 80 °C to about 140 °C.

9. The process of claim 1 in which the reaction mixture is mixed for a period of time up to 60 minutes.

10. The process of claim 1 in which the reaction mixture is mixed for a period of time up to 30 minutes.

11. The process of claim 1 in which excess calcium hydroxide is separated from the reaction mixture by centrifugation.

12. The process of claim 11 in which the centrifugation is performed for less than about 20 minutes.

13. The process of claim 1 in which the intermediate product is concentrated by a method selected from the group consisting of distillation and vacuum flashing.

14. The process of claim 1 in which the process is a continuous process.

15. The process of claim 2 in which the solvent is heptane, the dissolved or entrained SO_2 or SO_3 is removed via stripping with nitrogen, , and the intermediate product is concentrated by a method selected from the group consisting of distillation and vacuum flashing.

16. The process of claim 15 in which the process is a continuousprocess.

17. The process of claim 15 in which the centrifugation to remove excess calcium hydroxide is performed for less than about 20 minutes.

18. The process of claim 15 in which the calcium sulfonate in oil has a viscosity of between about 10

cSt/100°C and about 100 cSt/100°C.

19. The process of claim 18 in which the process is a continuous process.

20. The process of claim 19 in which the product is further concentrated by distillation.

21. A process for the production of low base number calcium sulfonate comprising:

a. preparing a sulfonic acid solution in oil by adding about 1 to about 20 volumes of a miscible solvent to sulfonic acid and removing dissolved or entrained SO_2 or SO_3 if present;

b. mixing the sulfonic acid solution in oil with about 1 to about 5 moles of water per mol of sulfonic acid and about 1 to about 10 moles of calcium hydroxide per mole of sulfonic acid to produce a reaction mixture;

c. heating the reaction mixture with stirring to a temperature between about 40 °C and about 200 °C;

d. separating excess calcium hydroxide from the heated-reaction mixture; and,

e. recovering the essentially chloride free calcium sulfonate product from the separated-reaction mixture.

22. The process of claim 21 in which the product after solvent removal is further concentrated by removing at least a portion of the oil.

23. The process of claim 22 in which the oil is removed by a method selected from the group consisting of distillation and vacuum flashing.

24. The process of claim 21 in which the dissolved or entrained SO_2 or SO_3 is removed via stripping with nitrogen.

25. The process of claim 24 in which the sulfonic acid is centrifuged prior to stripping.

26. The process of claim 21 in which the amount of water is from about 1 to about 3 mol/mol of sulfonic acid.

27. The process of claim 21 in which the amount of calcium hydroxide is about 1 to about 5 mol/mol of sulfonic acid.

28. The process of claim 21 in which reaction mixture is heated at a temperature in the range from about 80 °C to about 140 °C.

29. The process of claim 21 in which the reaction mixture is mixed for a period of time up to 60 minutes.

30. The process of claim 21 in which the reaction mixture is mixed for a period of time up to 30 minutes.